



**NORTHROP GRUMMAN**

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**EXELIS**



# Cryo Test Configuration Status

**Gary Matthews, JWST AI&T Program Director**

**Tom Scorse, JWST OTIS Program Manager**

**November 2014**



# General Program Status



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- **Optical Telescope Element (OTE)/Integrated Science Instrument Module (ISIM) [OTIS] Cryo Test Equipment and Cryo Test**
  - Optical Ground Support Equipment (OGSE) Integration complete at JSC
  - Started Chamber Commissioning on schedule on 10/10



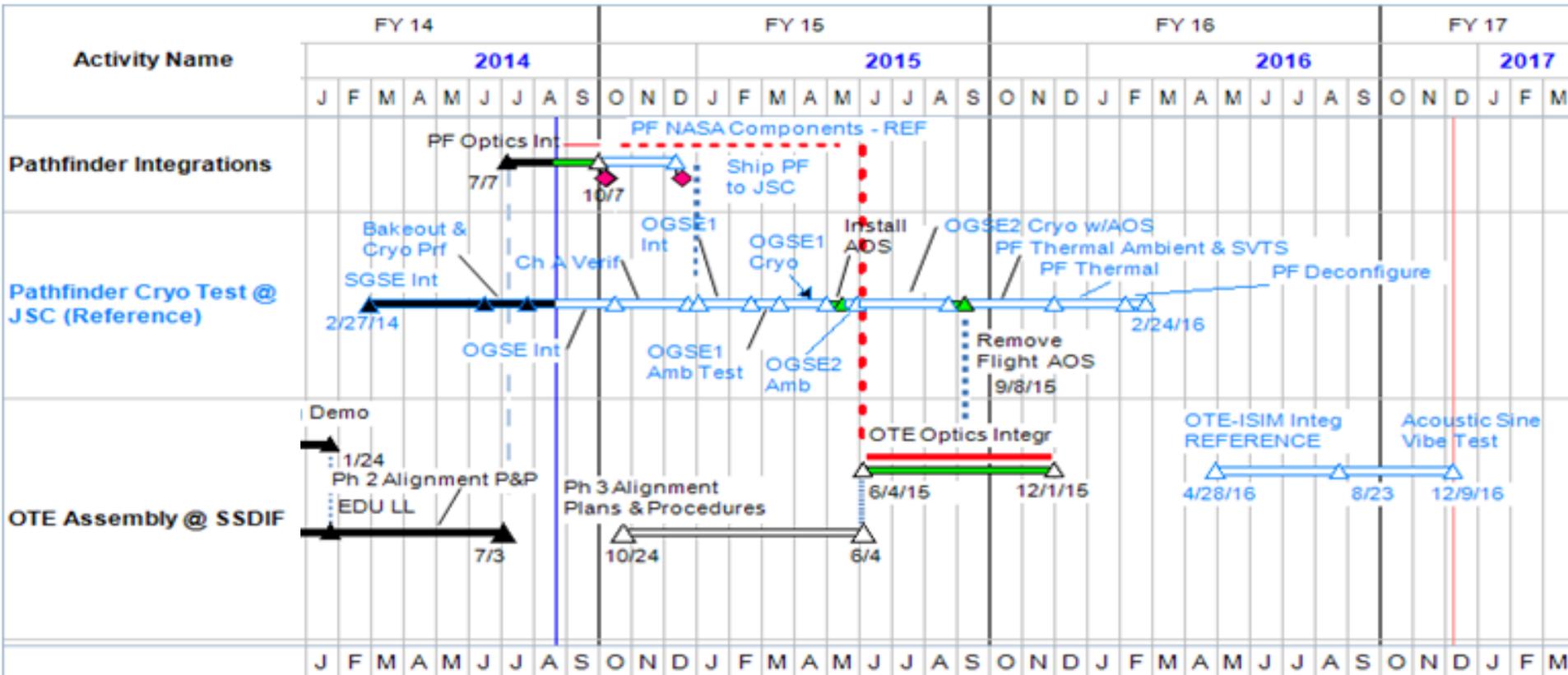
# Schedule Overview



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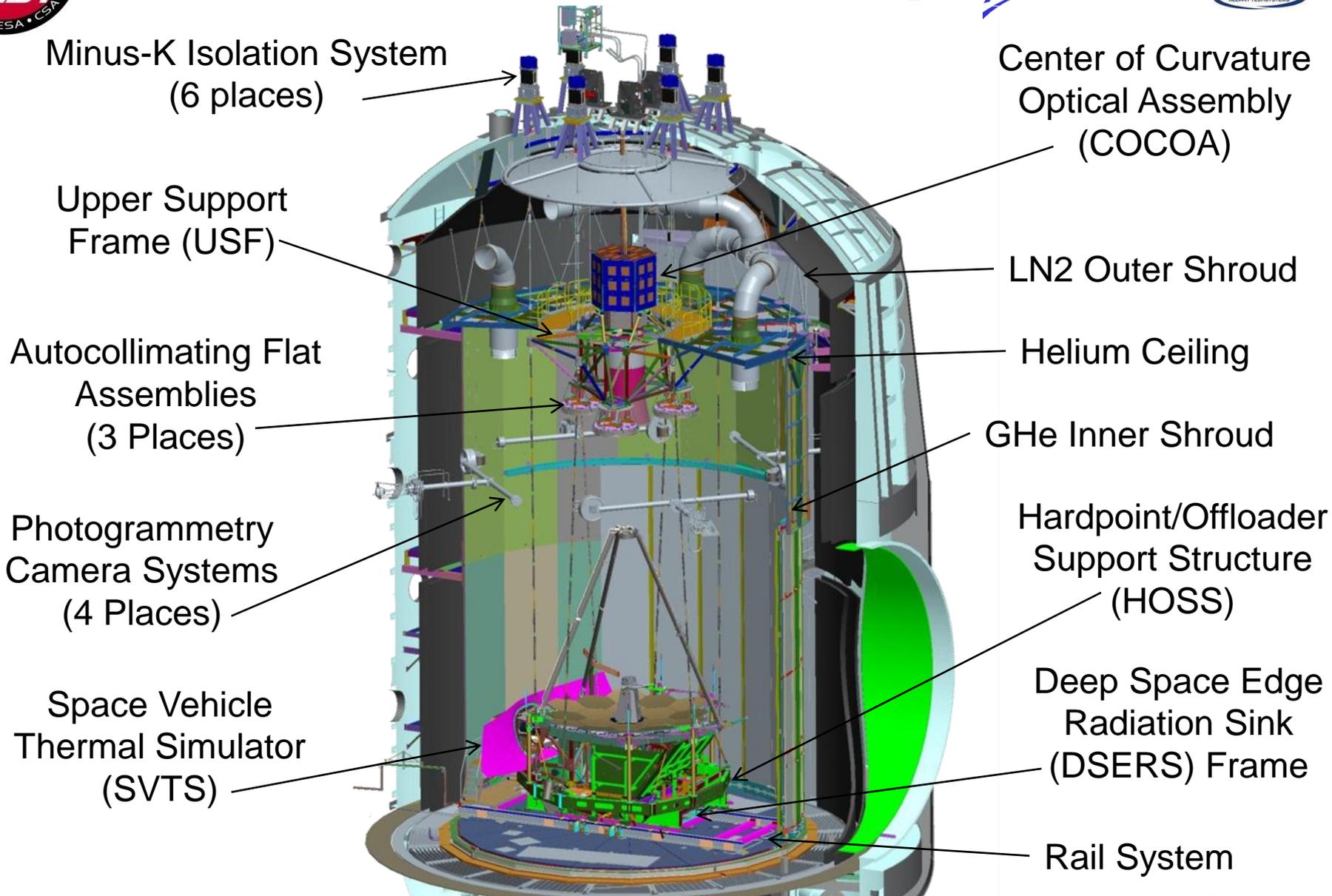
# Cryo Test Configuration



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# OTIS Test GSE Status



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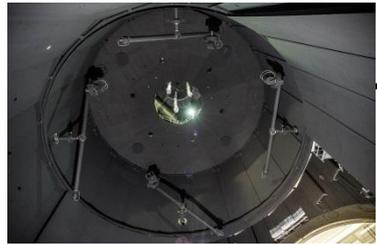


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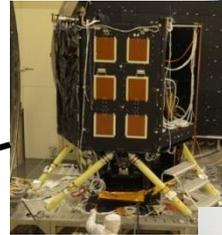
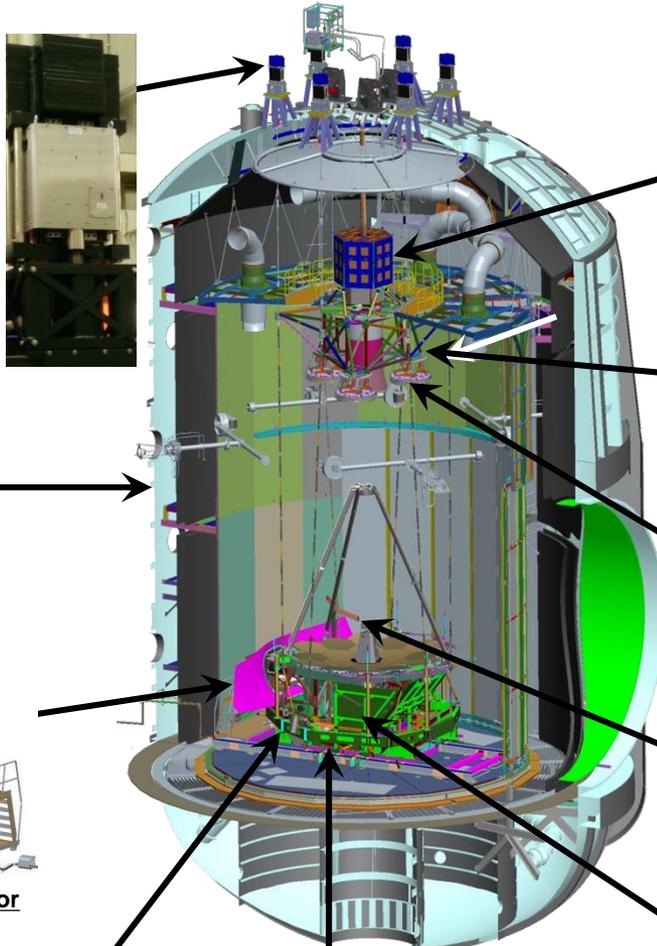
**Chamber Isolator Units**  
Dynamically isolates OTIS  
Optical Test – Integration of  
6 units complete

**Cryo Position Metrology (CPM)**  
Photogrammetry System  
Integration Complete



**Space Vehicle Thermal Simulator (SVTS) and Sunshield Simulator**  
Procurements and fabrication

**ADM**  
Leica system  
delivered to  
JHU



**Center of Curvature Optical Assembly (COCOA)**  
• Multiwavelength interferometer (MWIF), null, calibration equipment, coarse/fine PM phasing tools, Displacement Measuring Interferometer – Installed in Chamber



**USF Structural Frame** – supports Metrology  
Installed in Chamber



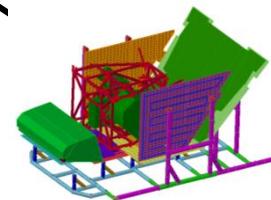
**3 Auto collimating Flat Mirrors (ACFs)**  
1.5 M Plano for Pass and Half Testing  
ACF 1 installed in Chamber, ACF 4 in final cryo test, ACF 5 waiting for final cryo test.



**AOS Source Plate**  
Sources for Pass and Half Test  
In test at Ball



**HOSS – OTIS support structure**  
Installed on Telescope Rods



**Deep Space Edge Radiation Sink (DSERS)**  
Frame integrated



**Mag Damper**  
Cryo Test  
Article  
Delivered



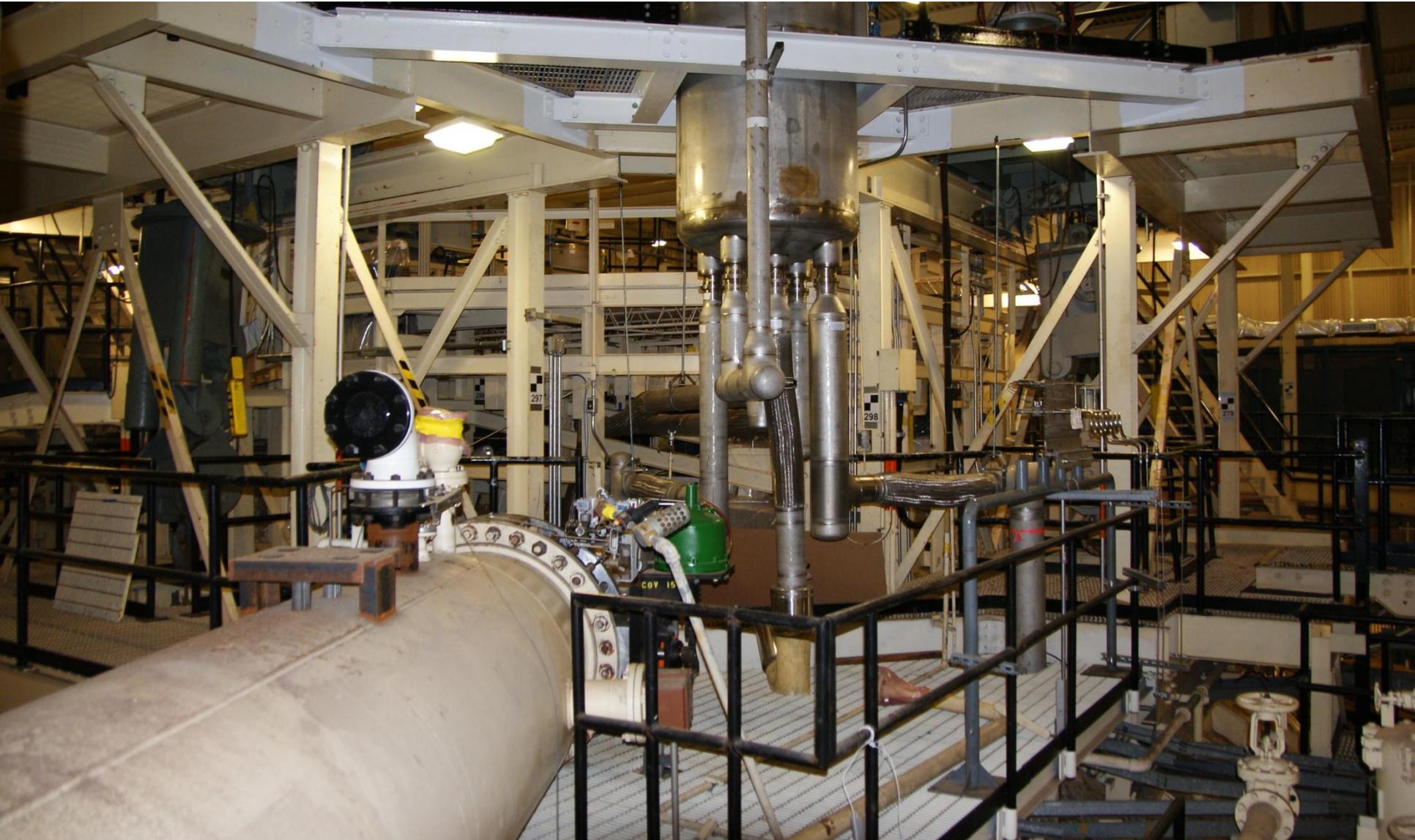
# Level 7 – Top of Chamber



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# Level 7 – Tight Spaces



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# Isolation System



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# Photogrammetry System

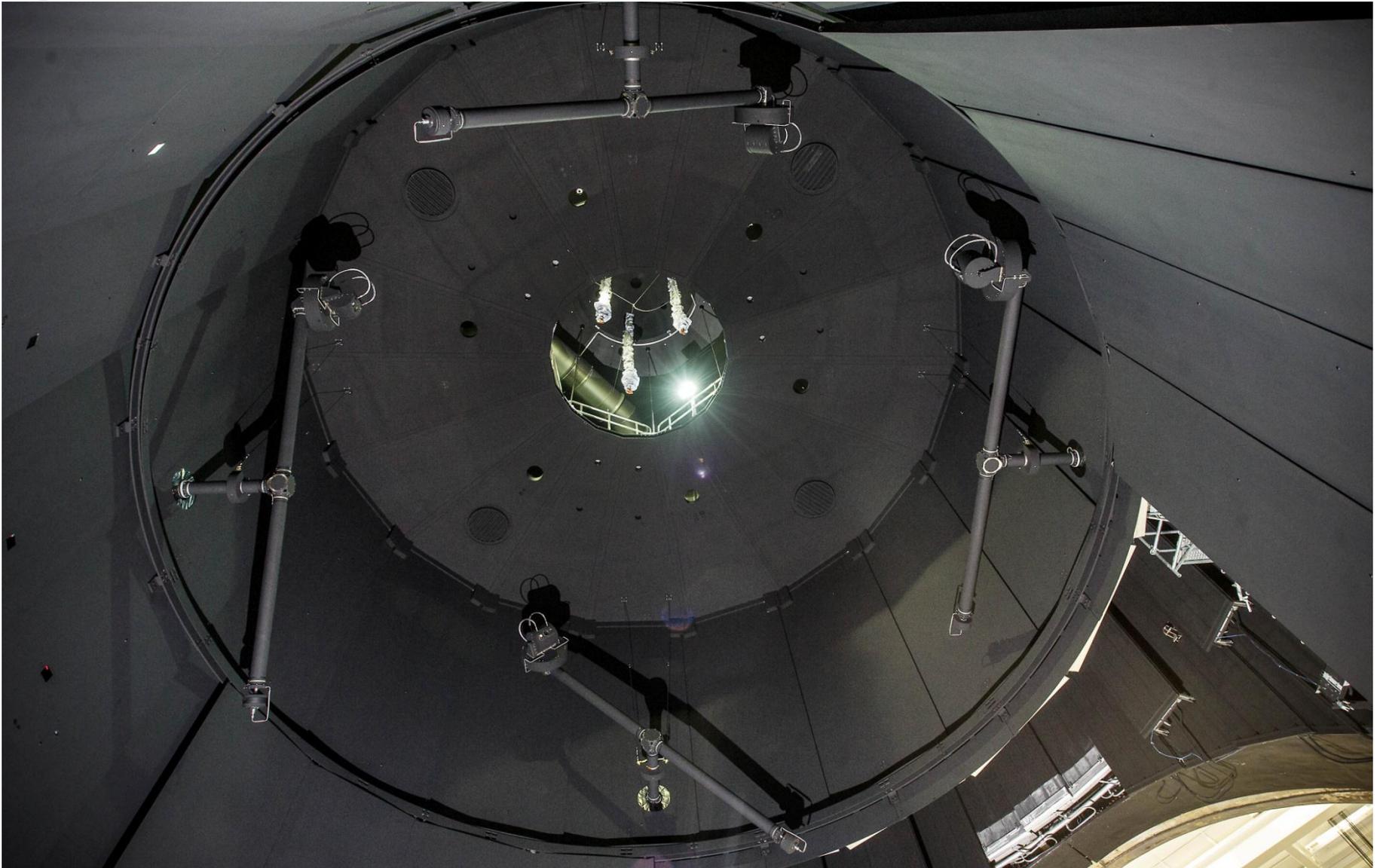


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# ACU Assembly



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ACF/COCOA/USF (ACU)  
Assembly on the transport  
dolly.

Note that the COCOA  
thermal plug is also  
attached

Total assembly will be lifted  
to the top of the chamber



# ACF#1 Integration



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Integration of the ACF onto the ACU assembly. Actuator assembly seen in left photograph



# Integrated ACF#1

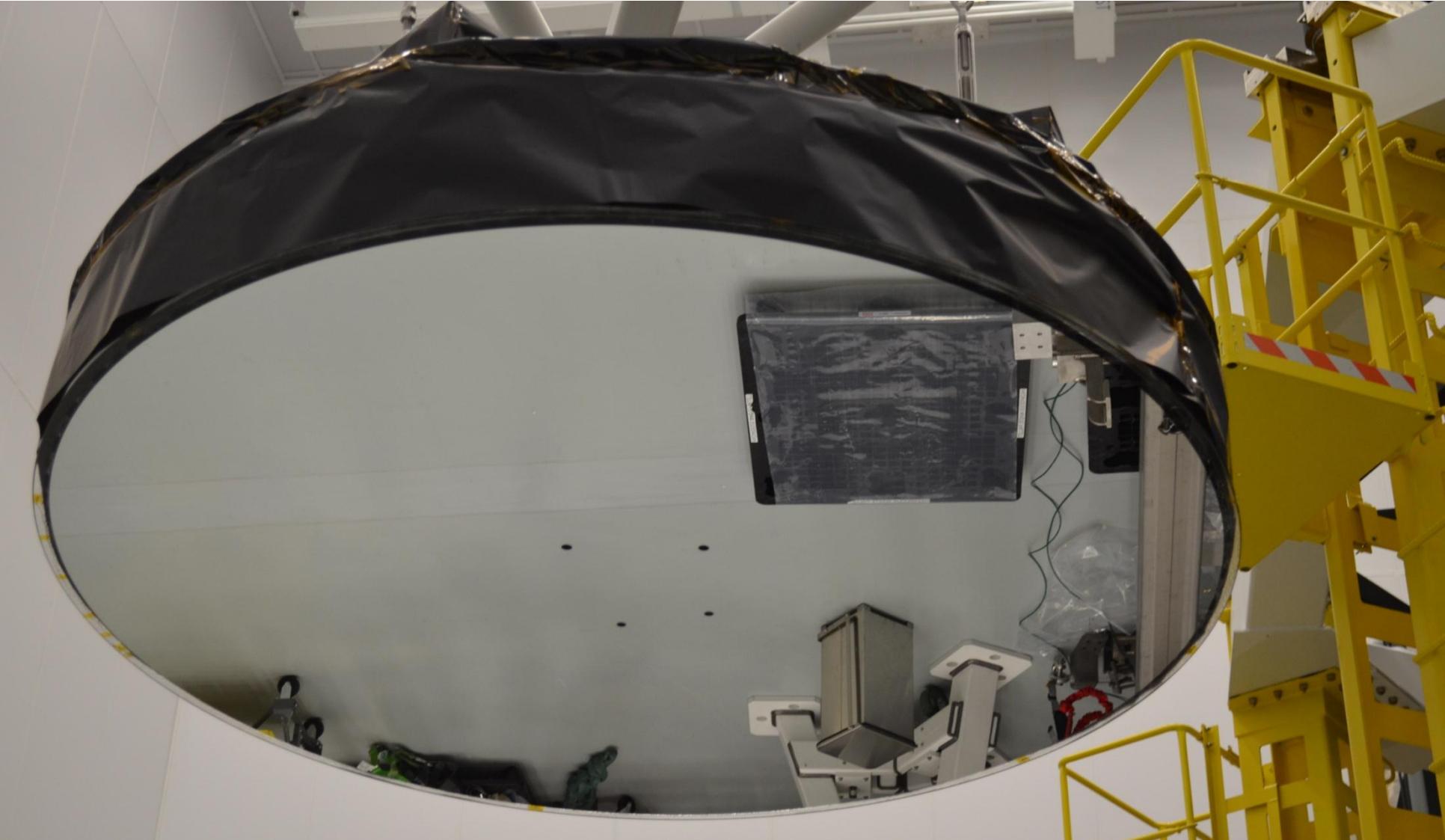


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# ACU Lift in Chamber A



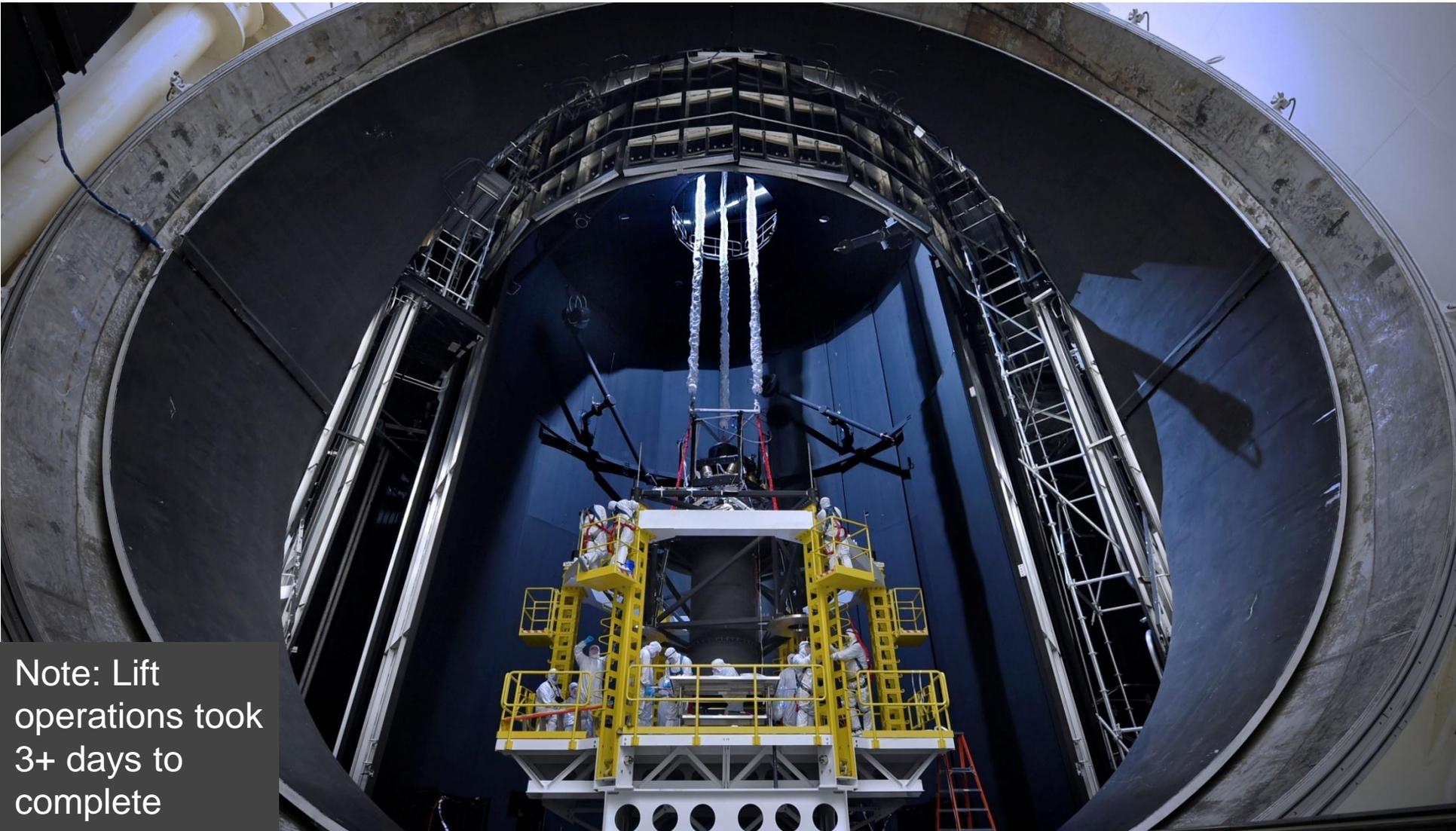
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Lifting the ACF/COCOA/USF (ACU) assembly into the top of the chamber using the Direct Lift System



Note: Lift operations took 3+ days to complete



# Level 5 – Above the He Shroud

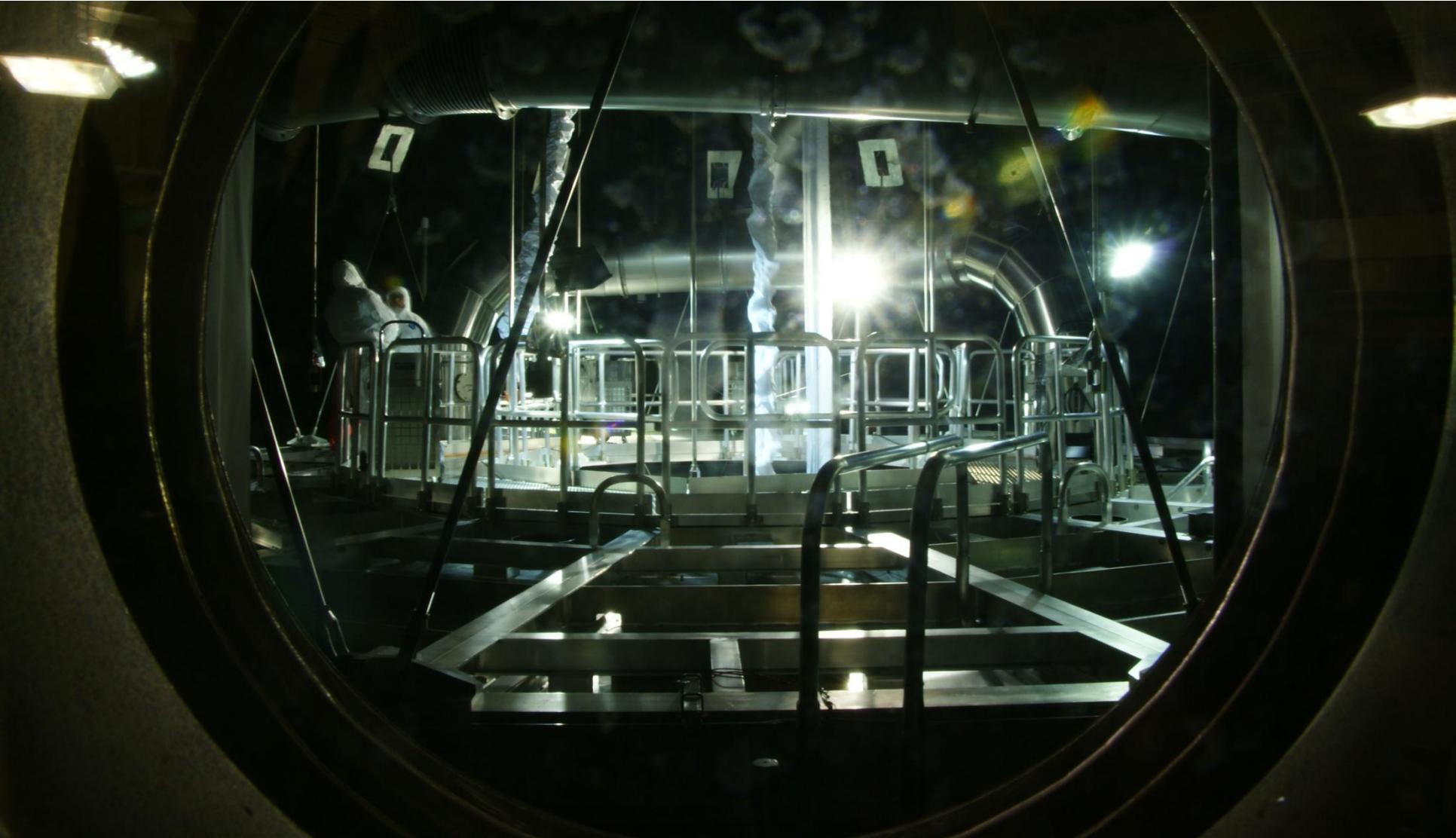


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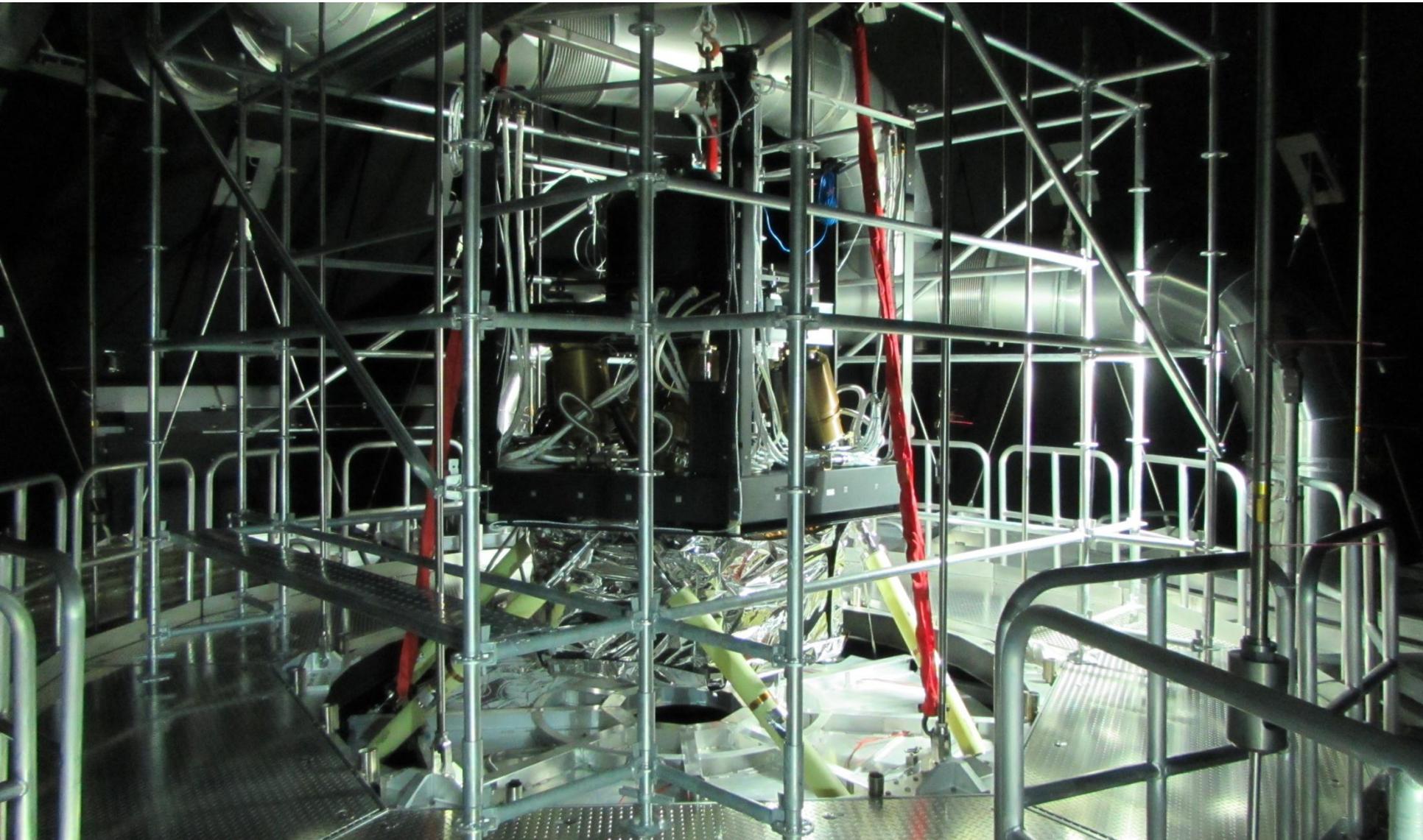
# COCOA in place on Level 5



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# ACU and Telescope Rods



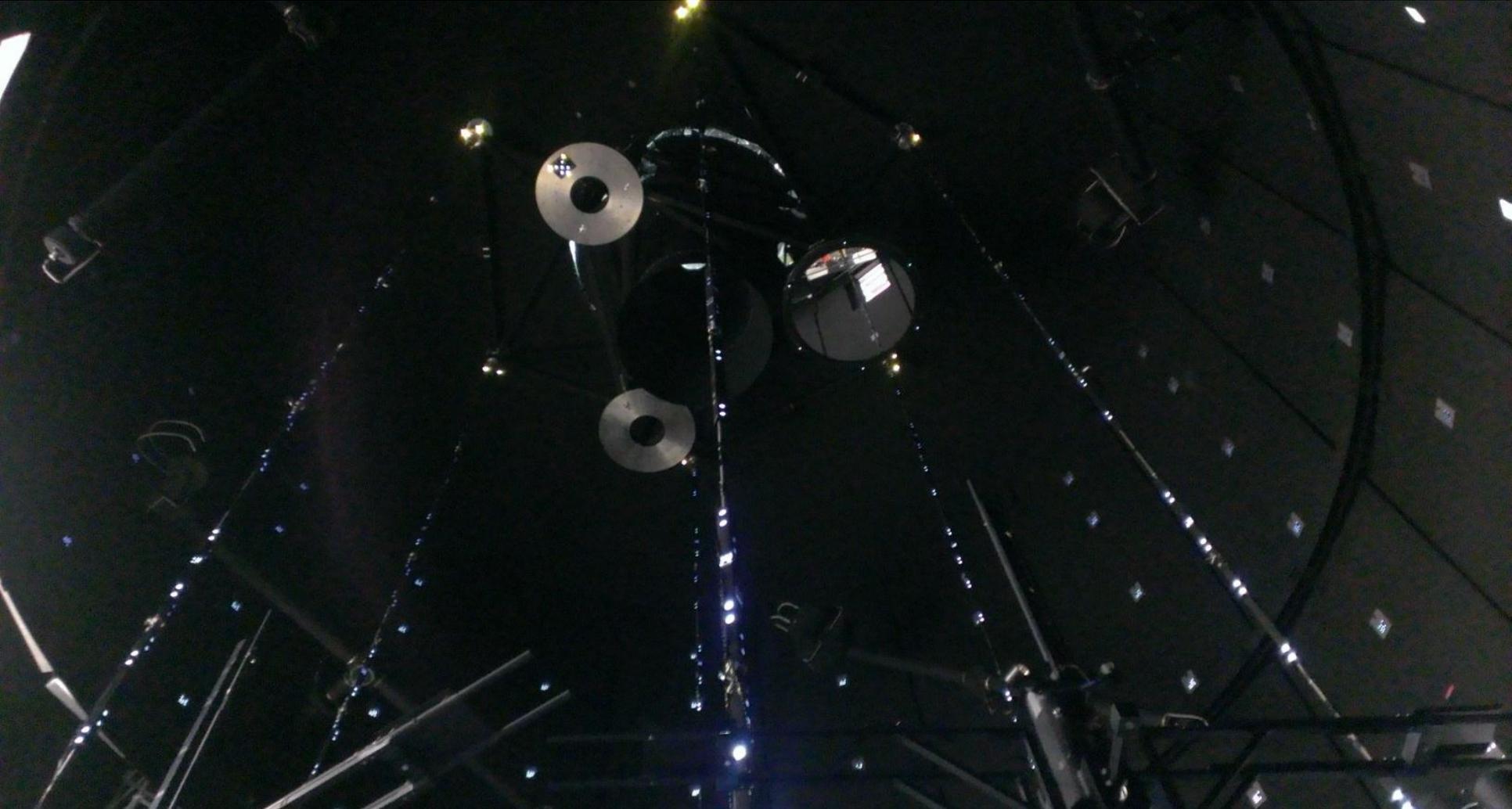
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The USF and one ACF (with the other two ACF Mass Simulators) can be seen with the PG booms.





# PG Targets and Code Plates

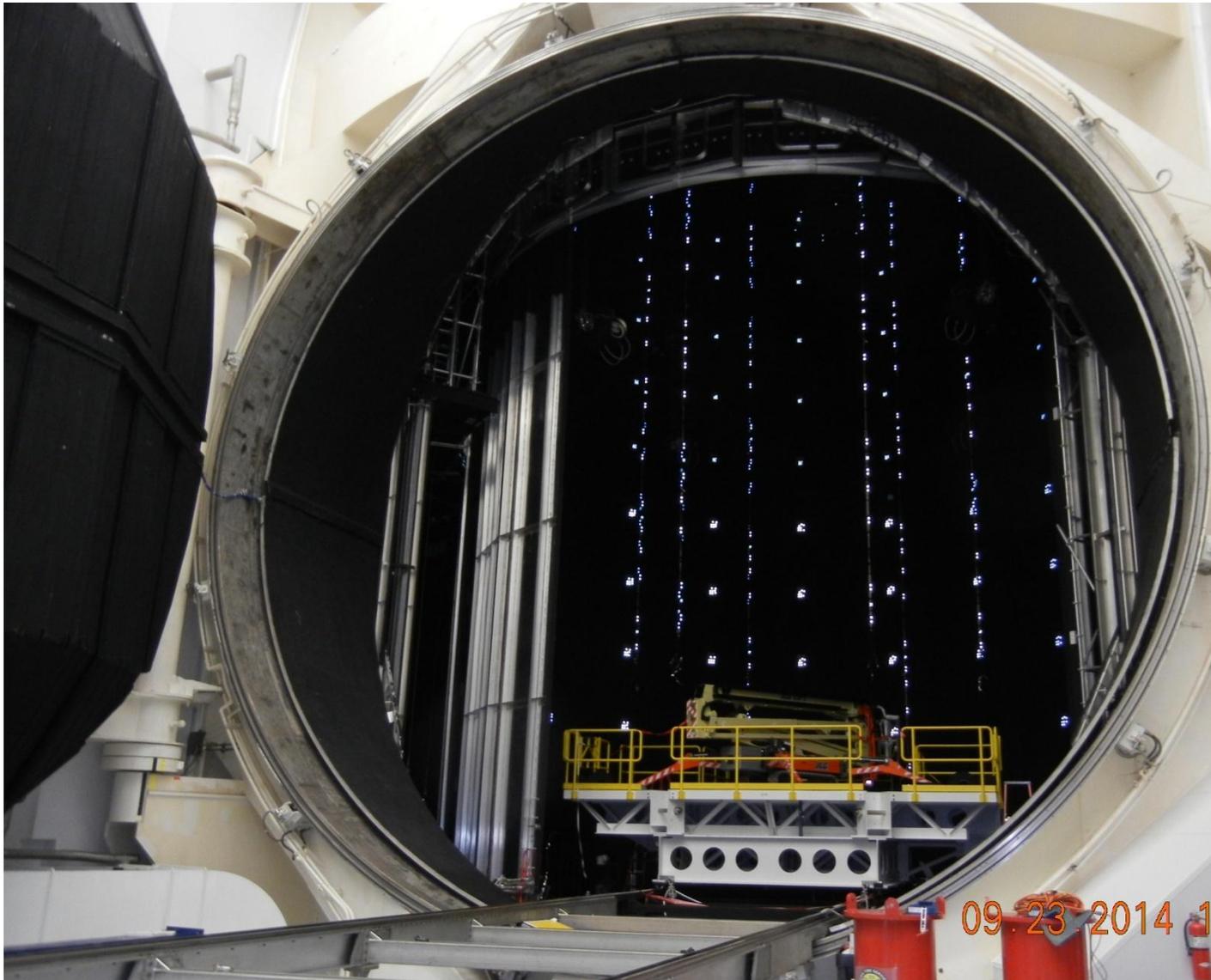


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Recent picture showing the Photogrammetry code plates and targets in a flash picture



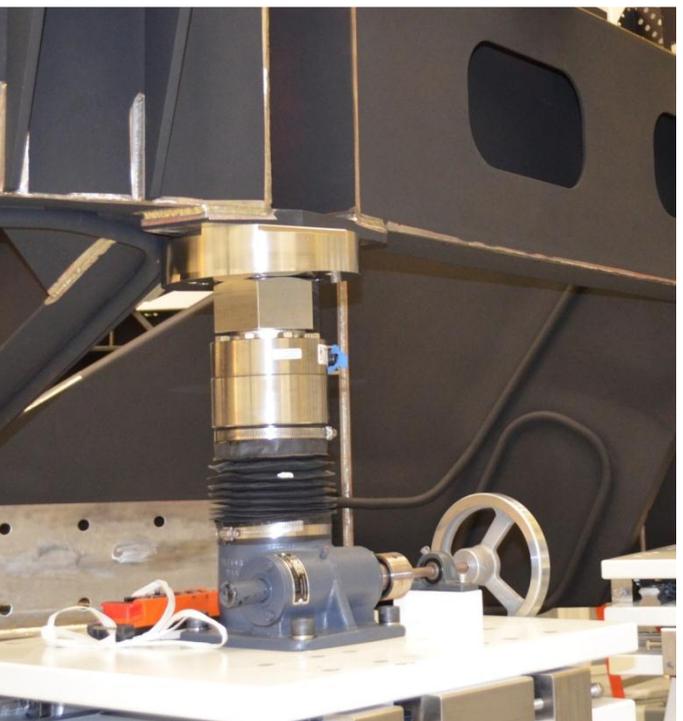
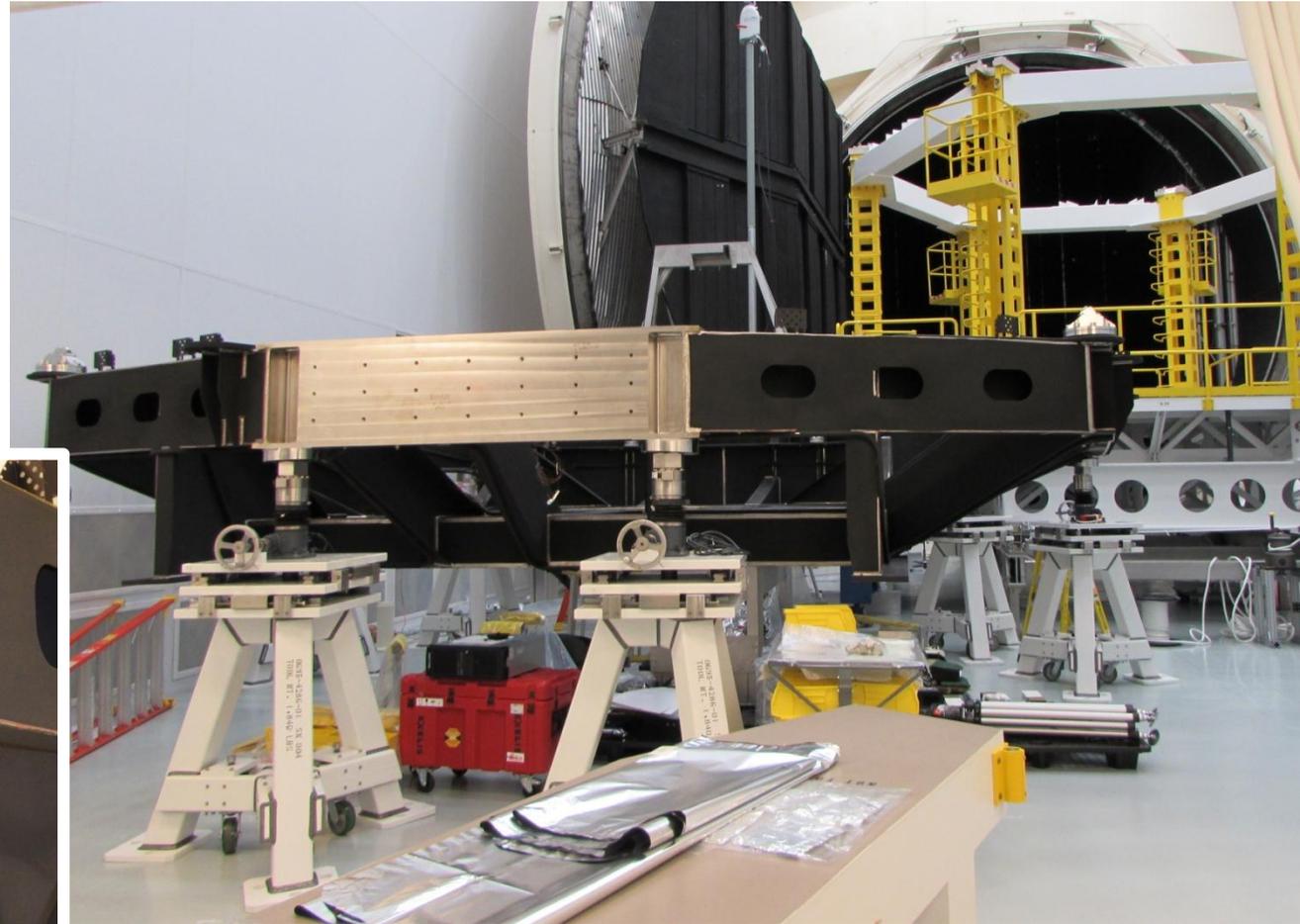
# HOSS in Clean Room



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HOSS sitting on the pedestals with load cells



# HOSS Details



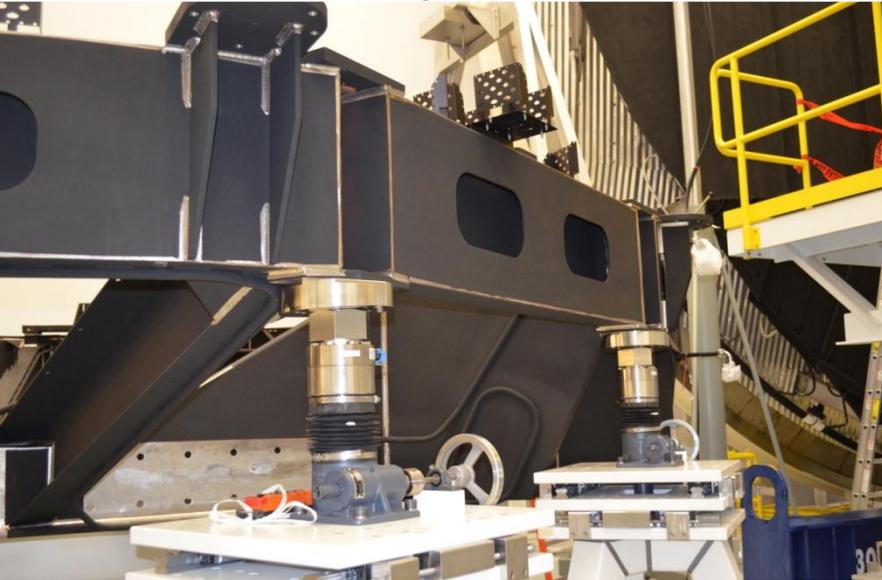
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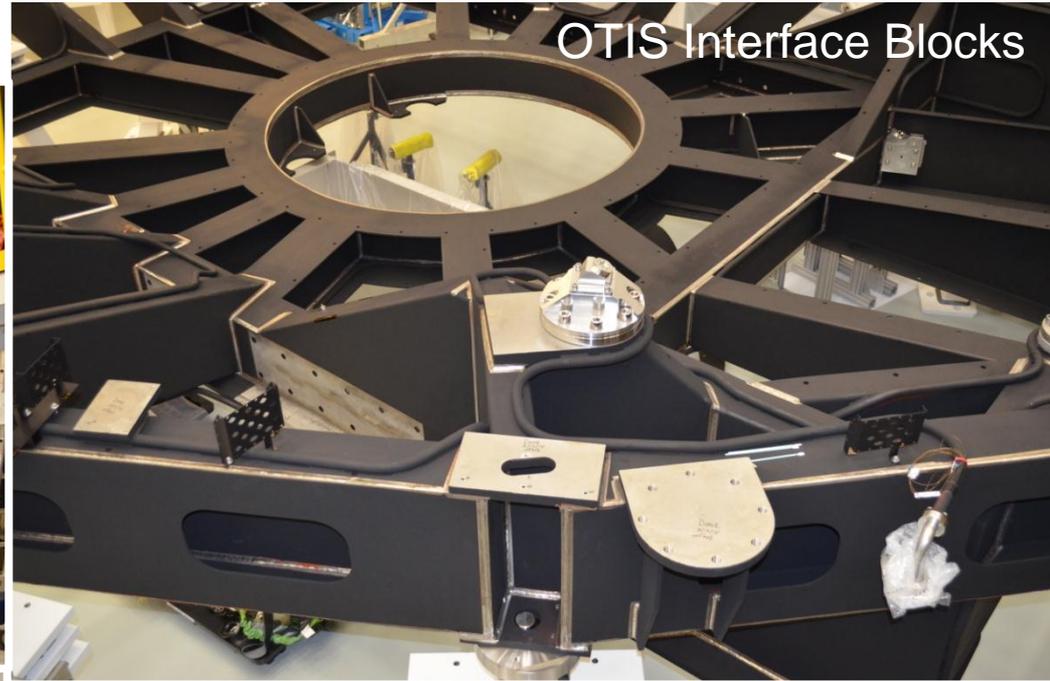
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Leveling Jacks



OTIS Interface Blocks



Thermal Diode connectors around the OD of the HOSS



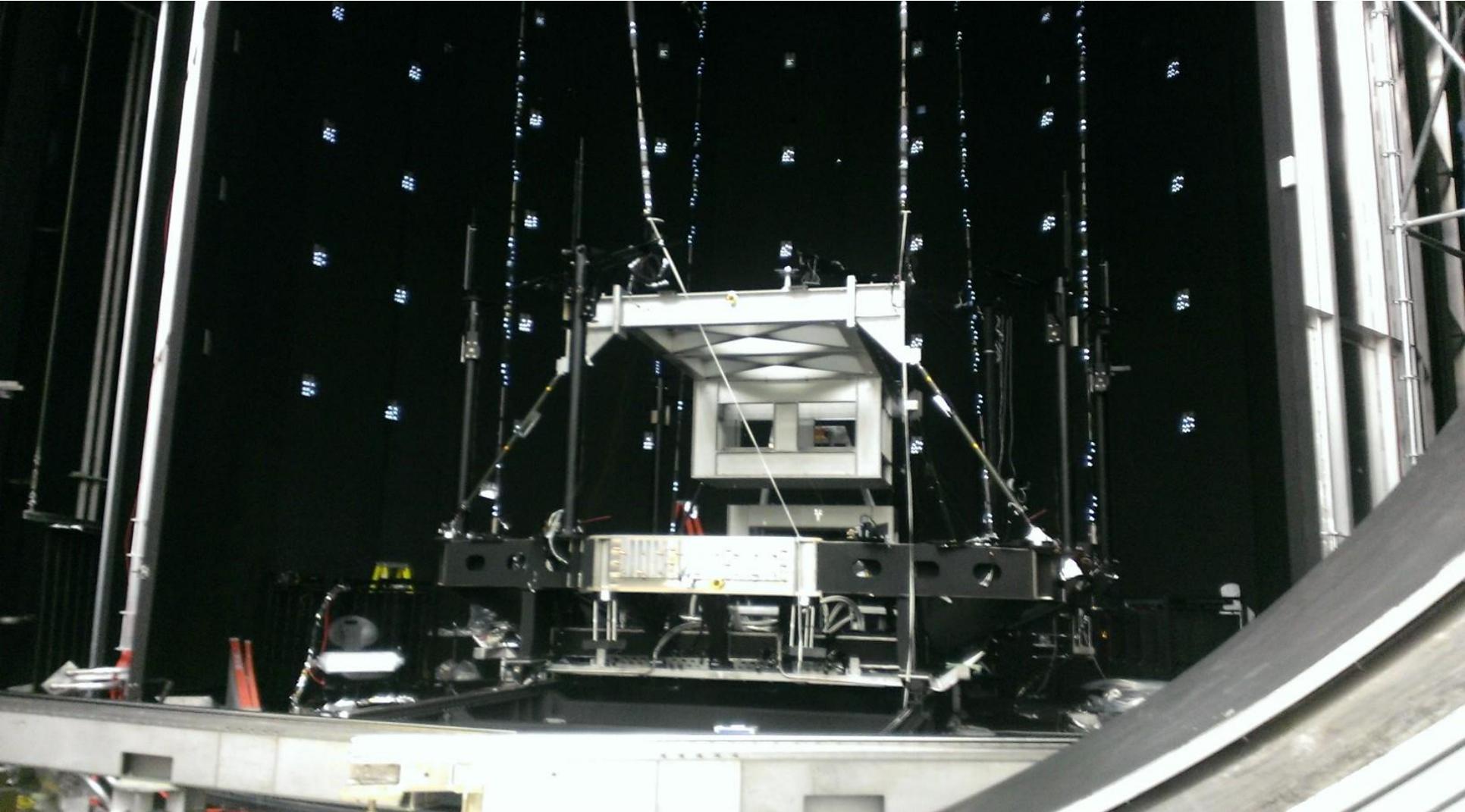
# HOSS with 2X OTIS Mass Sim



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# Summary



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- **Currently in Chamber Commissioning**

- Full checkout of Optical Ground Support Equipment in process
- Many issues found and punch list developed

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